REMARKS

The case as amended now contains 42 total claims, of which 3 are in independent form. Payment of an extra claims fee of $117 (13 additional claims X small entity fee of $9) accompanies this paper.

The amendments to claim 17 are supported by original claims 23, 24 and 25.

Claim 29 is amended to correct a dependency error.

New claim 36 is supported by original claims 17, 26, 27 and 28. New claims 37-48 are supported by original claims 18-22 and 29-35.

Regarding the §112 rejections, the objections to the specification, drawings and claims 4 and 20

All of these issues relate to the "open channel" limitations of claims 4 and 20. These rejections and objections are respectfully traversed.

At page 11 lines 26-29, an "open-channel" system is identified as one that is exposed to the atmosphere. Explicit reference is made there to features in the drawings, including weir opening 6 and drainpipe 40 of Figure 1, where the system is exposed to the atmosphere. Drainpipe 140 of Figure 4 is also shown extending above the level 105 of fluid in the reservoir and therefore being exposed to the atmosphere. As explained at page 11 lines 26-29, exposure to the atmosphere can also exist at some point downstream of fluid outlet 41. As discussed at page 11 lines 20-23, this allows entrapped gasses to escape to the atmosphere, for example, via weir opening 6 (when partially submerged) or the top of drainpipe 40.

Regarding the Rejection of claims 1-3, 5-11, 17-19 and 21-28 as anticipated by Bauer (U. S. Patent No. 4,094,338)

Present claim 1 requires the claimed floating weir assembly to have a weir opening that is "vertically adjustable with respect to the surface of the fluid in a vessel . . . such that the portion of the weir opening that is submerged is controllable through vertical adjustment of the weir opening". This feature is not disclosed in the Bauer reference. In the Bauer reference, the "weir opening" is vertically adjustable, but not in such a manner that the portion of the weir opening that is submerged can be adjusted. In Bauer, the weir opening is horizontal, and as such is always fully submerged. Bauer's vertical adjustment controls the depth to which the weir opening is submerged, not the portion of the weir

opening that is submerged. *See, e.g.,* column 3, first full paragraph of the reference, where Bauer discusses the need to keep the head H (i.e., the depth of the weir opening beneath the fluid level) constant during operation.

Bauer does not anticipate claim 1 or any claim depending on claim 1 (i.e., claims 2-16) for at least that reason.

Bauer fails to anticipate claim 2, 7 or 14 (or any of claims 3-5, 8-13 or 15-16 which depend from claim 2, 7 or 14), for the additional reason that Bauer does not disclose a floating weir assembly in which the rate of flow of fluid through the floating weir assembly is limited by the rate of flow of the fluid into the the fluid inlet through the weir opening. This is evident from several of Bauer's teachings. First, Bauer's weir opening is much larger than his outlet pipe, so that a bottleneck is created by conduit 28. *See* Bauer's Figures 2, and 3 and his discussion of weir and pipe sizes at column 2 lines 37-41 and lines 67-68.

Secondly, Bauer explicitly teaches that "liquid level D within conduit 28 remains constant for a given flow rate as it is dependent on the frictional resistance of flow through the conduit". Column 3 lines 8-10. In other words, Bauer's system is designed so that flow out of conduit 28 controlled by the rate at which fluid leaves his system (by flowing through conduit 28), not by the rate at which fluid enters his system (through weir opening 12).

Thirdly, Bauer's entire spring design is necessary only because fluid accumulates in his conduit 28. This can happen only if the rate or fluid egress is controlled by outflow rates rather than flow rates into his weir opening.

The significance of controlling flow rate through the rate of flow through the weir opening is described at page 11, the second full paragraph of the current specification.

Bauer fails to anticipate claim 4 for the further reason that Bauer does not describe an open-channel system.

Bauer fails to anticipate claim 11 or claim 16 for the further reason that Bauer's system does not include a means for adjusting ballast in response to changes in the level of fluid in the vessel, such that "the rate of flow of the fluid into the fluid inlet through the weir opening adjusts with changes in the level of the fluid". Bauer's springs have exactly the opposite effect—the operate to offset buoyancy changes caused indirectly by changes in fluid level, so that the flow rates remain <u>constant</u>. This is the entire point of Bauer's spring device, as he explains most succinctly at column 3 lines 35-50.

Claim 17 as amended now requires the floating weir assembly to have a completely submerged weir opening that includes a means for adjusting the weir opening size and thereby adjust the rate of flow of fluid through the weir opening. Bauer discloses no such feature. Bauer's weir opening is of a fixed geometry. Bauer therefore fails to anticipate claim 17 or any of claims 18-22 or 29-35, which depend from claim 17.

Claims 18-21 and 29-35 are further distinguished from Bauer for the same reasons as discussed above with respect to claims 2, 7 and 14.

Claim 20 is further distinguished from Bauer for the same reasons as discussed with respect to claim 4.

New claim 36 is based on original claim 28, and requires that the floating weir assembly has a partially submerged weir opening that includes a means for adjusting the weir opening size, the buoyancy of the buoyancy means or the position of the weir opening relative to the surface of the fluid. As discussed before with respect to claim 1, Bauer does not describe a weir assembly with a partially submerged weir opening. In addition, Bauer does not describe an assembly having an adjustable weir opening, means to adjust the buoyancy of the buoyancy means. (In Bauer, the springs counteract changes in the weight of the system but do not change the buoyancy of the buoyancy means, which is constant in his system.) Bauer therefore does not anticipate new claim 36 or any claim that depends from claim 36.

Claims 37-48 are further distinguished from Bauer for the same reasons as are claims 2, 7 and 14.

New claim 39 is further distinguished from Bauer for the same reasons as discussed above with respect to claim 4.

Because Bauer fails to disclose all of the features of any of the present claims, no claim in this application is anticipated by Bauer. The §102(b) rejection is therefore respectfully traversed.

<u>Regarding the §103(a) rejection of claims 12, 13, 29-31 and 33</u>

The secondary references here (Ayukawa et al. and Diggs) are cited only because they show, respectively, a rainwater sewage system and an irrigation system. Neither secondary reference is alleged to describe (nor do they describe) any of the features of the present claims that are missing from Bauer—i.e., the weir opening that is adjustable so that the portion of it that is submerged can be controlled (claim 12 and 13), the adjustable

size weir opening (claims 29-31 and 33) and the rate of flow through the floating weir assembly being controlled by the rate of flow through the weir opening (claims 12, 13, 29-31 and 33). Thus, no combination of Bauer and Ayukawa et al. or Diggs leads to the present invention as set forth in claims 12, 13, 29-31 and 33.

Regarding the §103(a) rejection of claims 14-16 and 34-35

As discussed above, all of these claims require that the flow rate through applicant's floating weir system be controlled through the flow rate of the fluid through the weir opening. This feature is not present in Bauer. This is evident from the fact that Bauer intends for fluid to accumulate in his outlet conduit 28 during operation. This can only happen if fluid flow through or out of conduit 28 is slower than the rate of fluid into his weir 20. In Bauer, fluid flow rates are controlled by the design of pipe 28 and/or other downstream conditions (such as fluid levels and/or pressures in downstream processes "A"-"D", *see* his Figure 1), resulting in fluid accumulation in his conduit 28.

It is this fluid accumulation in conduit 28 that makes Bauer's complicated spring design necessary. In applicant's invention, it is usually not necessary to compensate for the weight of fluid in the fluid path between floating weir and the vessel outlet, because flow rates are set by the rate of flow into the weir opening. This results in little or no accumulation of fluid within the path, and thus there are minimal if any resulting effects on buoyancy. The examiner should not confuse the optional adjustment features of this invention (illustrated in Figure 6 and described on pages 14-15 of this specification) with Bauer's springs. The optional adjustment features of this invention are intended to increase flow rates with increasing fluid level in the vessel. This effect is the opposite of the function of Bauer's springs. Thus, the spring assembly described at page 15 lines 1-5 of applicant's specification increases downward force on the floating weir assembly as fluid levels rise, thereby increasing the size of the submerged portion of the weir opening and increasing flow rates with increasing fluid levels. Bauer's springs increases downward forces on the floating weir assembly so that flow rates remain constant with fluctuating fluid levels. In applicant's invention, no springs or other special apparatus are needed to maintain a containst flow rate.

In addition, nothing in Bauer teaches or suggests any floating weir assembly with a partially submerged weir opening, or a weir opening having an adjustable size.

Respectfully submitted,
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